

Physics Department

Functional Heterostructures

Centre of Physics and Technological Research (CEFITEC)

Functional Molecular Systems (FMS)Line



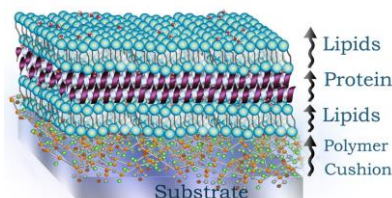
Maria Raposo

(Auxiliar Professor/
Head of FMS line)

PhD in Materials Science and Engineering (1999);
H-index 14;
Supervisor of Postdoc, PhD, Master and undergraduate students;
Coordinator and participant of projects

Objectives

Development of organic molecular heterostructures for creation of electrical, optical, magnetic and sensing devices applications and for controlled studies of radiation damage of biomolecules near cellular conditions, with different amount of water molecules in order to create conditions for the maintenance of biological molecules activity.



Methodology

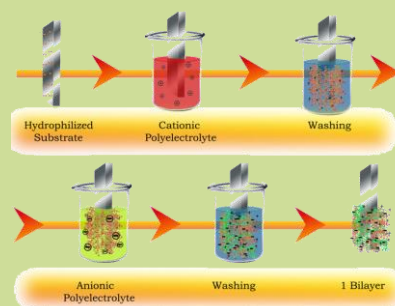
Production of ultrathin films by Langmuir, Langmuir-Blodgett, self-assembly and Layer-by-Layer (LbL) techniques.

Characterization Techniques: VUV, UV-visible, infrared and fluorescence spectroscopies, impedance spectroscopy, XPS, quartz crystal microbalance, atomic force microscopy, etc

Expected Results

Adsorption Phenomena and Physical Interactions;
Macromolecules conductivity models;
DNA and lipids radiation damage characterization;
Prototype of a long term optical organic memory;
Creation of surface relief gratings;
Prototype of an olive oil quality sensor;
Prototype of a ibuprofen sensor.

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LbL technique

